

Application No. 10/695,435
Amendment With RCE
Reply to Office Action of January 18, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A storage processing device for use in a switched fabric, the switched fabric including at least one switch and the storage processing device, with the storage processing device coupled to the at least one switch, with at least two storage units and at least one host connected to and coupled through the switched fabric where the at least one host and at least two storage units may be directly connected to the storage processing device or may be coupled through the at least one switch, the storage device to virtualize a storage unit and to do one of snapshotting of data on a storage unit, journaling data written to a storage unit or migration of data between first and second storage units whether the at least one host and at least two storage devices are directly connected to the storage processing device or are coupled through the at least one switch, the storage processing device comprising:

an input/output module including port-processors to receive, operate on and transmit network traffic, and

a switch coupling said port-processors; and

a control module coupled to said input/output module, said input/output module and said control module being configured to interactively support perform data virtualization and one of snapshotting, journaling or migration.

2. (Currently Amended) The storage processing device of claim 1 wherein said port-processors include a port-processor with a frame classification module, a virtual target task, and a virtual initiator task.

3. (Original) The storage processing device of claim 1 wherein said input/output module and said control module support a virtualization processor including a virtual target, a volume manager mapping block, and a virtual initiator.

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4. (Original) The storage processing device of claim 3, wherein said volume manager mapping block provides virtual block to physical block mappings.

5. (Currently Amended) The storage processing device of claim 3, wherein said ~~port~~ processors include a ~~port~~ processor with a frame classification module, a virtual target task and a virtual initiator task.

6. (Currently Amended) The storage processing device of claim 5, wherein said ~~port~~ processor utilizes said volume mapping block and said virtual target task to translate received frames from a virtual target to a physical target.

7. (Currently Amended) The storage processing device of claim 6, wherein said ~~port~~ processor utilizes said virtual initiator task to transmit frames to the physical target and receive response frames from the physical target.

8. (Original) The storage processing device of claim 7, wherein the virtual target translates to two physical targets and wherein said port processor utilizes said virtual target task to prepare a command frame for the second physical target and said virtual initiator to transmit said command frame to the second physical target.

9. (Currently Amended) A switched fabric for connection to and coupling of at least one host and at least ~~one~~ two storage ~~units~~ device, the fabric comprising:

at least one switch for coupling to the at least one host and the at least ~~one~~ two storage ~~units~~ device; and

a storage processing device coupled to the at least one switch and for coupling to the at least one host and the at least ~~one~~ two storage ~~units~~ device, where the at least one host and at least two storage units may be directly connected to the storage processing device or may be coupled through the switch, the storage processing device to virtualize a storage unit and to do one of snapshotting of data on a storage unit, journaling of data

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written to a storage unit or migration of data between first and second storage units whether the at least one host and at least two storage units are directly connected to the storage processing device or coupled through the at least one switch, the storage processing device including:

an input/output module including ~~port-processors~~ to receive, operate on and transmit network traffic, and

~~a switch coupling said port-processors; and~~

a control module coupled to said input/output module, said input/output module and said control module being configured to interactively support data virtualization of a storage unit and one of snapshotting, journaling or migration.

10. (Currently Amended) The fabric of claim 9 wherein said ~~port-processors~~ include a ~~port-processor~~ with a frame classification module, a virtual target task, and a virtual initiator task.

11. (Original) The fabric of claim 9 wherein said input/output module and said control module support a virtualization processor including a virtual target, a volume manager mapping block, and a virtual initiator.

12. (Original) The fabric of claim 11, wherein said volume manager mapping block provides virtual block to physical block mappings.

13. (Currently Amended) The fabric of claim 11, wherein said ~~port-processors~~ include a ~~port-processor~~ with a frame classification module, a virtual target task and a virtual initiator task.

14. (Currently amended) The fabric of claim 13, wherein said ~~port-processor~~ utilizes said volume mapping block and said virtual target task to translate received frames from a virtual target to a physical target.

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15. (Currently Amended) The fabric of claim 14, wherein said ~~port~~-processor utilizes said virtual initiator task to transmit frames to the physical target and receive response frames from the physical target.

16. (Original) The fabric of claim 15, wherein the virtual target translates to two physical targets and wherein said port processor utilizes said virtual target task to prepare a command frame for the second physical target and said virtual initiator to transmit said command frame to the second physical target.

17. (Currently Amended) A network comprising:
 at least one host adapted to be connected to a switched fabric;
 at least ~~one~~ two storage ~~units~~ device adapted to be connected to a switched fabric;
 and
 a switched fabric connected to and coupling the at least one host and the at least ~~one~~ two storage ~~units~~ device, the switched fabric comprising:
 at least one switch for coupling to the at least one host and the at least ~~one~~ two storage ~~units~~ device; and
 a storage processing device coupled to the at least one switch and for coupling to the at least one host and the at least ~~one~~ two storage ~~units~~ device, where the host and the at least two storage units may be directly connected to the storage processing device or may be coupled to the storage processing device through the switch, the storage processing device including:
 an input/output module including ~~port~~-processors to receive,
operate on and transmit network traffic, and
~~a switch coupling said port processors; and~~
 a control module coupled to said input/output module, said input/output module and said control module being configured to interactively ~~perform support data virtualization of a storage unit and one of snapshotting of data on a storage unit, journaling of data being written to a storage unit, or migrating data between first and second storage units whether the at least one host and the at least two storage~~

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units are directly connected to the storage processing device or are coupled through the switch.

18. (Currently Amended) The network of claim 17 wherein said ~~port~~ processors include a ~~port~~-processor with a frame classification module, a virtual target task, and a virtual initiator task.

19. (Currently Amended) The network of claim ~~18-17~~ wherein said input/output module and said control module support a virtualization processor including a virtual target, a volume manager mapping block, and a virtual initiator.

20. (Original) The network of claim 19, wherein said volume manager mapping block provides virtual block to physical block mappings.

21. (Currently Amended) The network of claim 19, wherein said ~~port~~ processors include a ~~port~~-processor with a frame classification module, a virtual target task and a virtual initiator task.

22. (Currently Amended) The network of claim 21, wherein said ~~port~~ processor utilizes said volume mapping block and said virtual target task to translate received frames from a virtual target to a physical target.

23. (Currently Amended) The network of claim 22, wherein said ~~port~~ processor utilizes said virtual initiator task to transmit frames to the physical target and receive response frames from the physical target.

24. (Currently Amended) The network of claim 23, wherein the virtual target translates to two physical targets and wherein said ~~port~~-processor utilizes said virtual target task to prepare a command frame for the second physical target and said virtual initiator to transmit said command frame to the second physical target.

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25. (Currently Amended) A method for supporting data-virtualization of a storage unit and one of snapshotting a storage unit, journaling data written to a storage unit or migrating data between first and second storage units, with at least one host and at least two storage units connected to and coupled by a switched fabric, the switched fabric including at least one switch and a storage processing device coupled to the at least one switch, where the at least one host and at least two storage units may be directly connected to the storage processing device or may be coupled through the at least one switch, the method comprising in a storage processing device, comprising:

providing an input/output module including: ~~port~~ processors receiving, operating on and transmitting network traffic; and

~~a switch coupling said port processors; and~~

providing a control module coupled to said input/output module, said input/output module and said control module being configured to interactively support data virtualization and one of snapshotting, journaling or migration whether the at least one host and at least two storage units are directly connected to the storage processing device or are coupled through the at least one switch.

26. (Currently Amended) The method of claim 25 wherein said ~~port~~ processors include a ~~port~~ processor with a frame classification module, a virtual target task, and a virtual initiator task.

27. (Original) The method of claim 25 wherein said input/output module and said control module support a virtualization processor including a virtual target, a volume manager mapping block, and a virtual initiator.

28. (Original) The method of claim 27, wherein said volume manager mapping block provides virtual block to physical block mappings.

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29. (Currently Amended) The method of claim 27, wherein said ~~port~~ processors include a ~~port~~ processor with a frame classification module, a virtual target task and a virtual initiator task.

30. (Currently Amended) The method of claim 29, wherein said ~~port~~ processor utilizes said volume mapping block and said virtual target task to translate received frames from a virtual target to a physical target.

31. (Currently Amended) The method of claim 30, wherein said ~~port~~ processor utilizes said virtual initiator task to transmit frames to the physical target and receive response frames from the physical target.

32. (Currently Amended) The method of claim 31, wherein the virtual target translates to two physical targets and wherein said ~~port~~ processor utilizes said virtual target task to prepare a command frame for the second physical target and said virtual initiator to transmit said command frame to the second physical target.